

ART 34 AMDT

What Is Claimed Is:

1. A method for follow-up treatment of the contour of the surface of at least one optical lens, in particular a microlens which is made of glass or a glass-type material and which has a convex lens surface delimited by a circumferential line abutting on a plane section surrounding said circumferential line and which has a lens underside facing the convex lens surface,

wherein along said circumferential line of the optical lens on said plane section is placed a means perfectly matching said circumferential line and at least laterally bordering said convex lens surface,

said optical lens is heated to a temperature of at least the transformation temperature of said glass or glass-type material,

pressure equalization prevails between said convex lens surface and said lens underside, and

after a certain period of time, during which said optical lens undergoes said temperature treatment and subsequent cooling below said transformation temperature, said means is removed from said optical lens.

2. The method according to claim 1,

wherein the temperature and the period of time of said temperature treatment are selected according to the degree of change of the surface contour.

3. The method according to claim 1 or 2,

wherein a pressure acting on said convex lens surface is varied during said temperature treatment.

4. The method according to claim 3,
wherein said pressure change is brought about by changing the gas pressure, respectively air pressure.
5. The method according to one of the claims 1 to 4,
wherein said means is pressed with force firmly against said circumferential line.
6. The method according to one of the claims 1 to 5,
wherein said optical lens is produced by means of a glass-flow process or by means of contactless hot stamping of a thermoplastic material and has as a result of said process an extremely steep elliptical gradient in the region of said circumferential line, and
said temperature treatment is conducted in conjunction with said means bordering said circumferential line in such a manner that said extremely steep elliptical gradient is reduced or completely eliminated.
7. The method according to one of the claims 1 to 6,
wherein said temperature treatment is conducted in conjunction with said means bordering said circumferential line in such a manner that the lateral geometric dimensions of said optical lens are retained.
8. The method according to one of the claims 1 to 7,
wherein said optical lens is borne horizontally during said temperature treatment, i.e. the convex lens surface is raised above a horizontal plane.
9. The method according to one of the claims 1 to 8,
wherein said means is brought into contact with said optical lens without wetting the surface.
10. The method according to one of the claims 1 to 9,
wherein a one-piece continuous array-like microlens arrangement is provided, having a multiplicity of single optical microlenses, which are spaced apart, preferably equidistant, by plane sections,

a means matching the arrangement and size of the circumference of the single microlenses is provided as a sort of template, which is placed at least partly on said plane sections and surrounds said circumferential lines of said individual microlenses, and

during said temperature treatment all said microlenses are heated uniformly and homogeneously.

11. The method according to one of the claims 1 to 10, wherein said temperature treatment occurs in such a manner that a reduction of said convex lens surface stems solely from the surface tensions acting along said convex lens surface, with the lens material being forced out of the regions of said exceedingly steep elliptical gradient on the convex-side into other regions of the lens body.

12. Use of a device for follow-up treatment of the contour of the surface of at least one optical lens, in particular a microlens which is made of glass or a glass-type material having a convex shaped lens surface which is delimited by a circumferential line abutting on a plane section surrounding said circumferential line, whereby said device is provided with a means designed as a sort of template having a cutout bordered by an edge which is flush with said circumferential line of said optical lens, said cutout being otherwise designed in such a manner that said template is placeable without touching said convex lens surface on said plane section surrounding said circumferential line, and said means provides at least one opening opposite said cutout in such a manner that no closed volume occurs between said optical lens and said means after placing said means on said plane section surrounding said circumferential line, in order to eliminate said exceedingly steep elliptical gradient present at the edge region of said lens by means of a temperature treatment of said optical lens on which said template-like means lies and said edge region of said optical lens is leveled using a reflow process in such a manner that a spherical or parabolical shaped lens cross section is obtained.

13. Use according to claim 12, wherein with a continuous reflow process, a hyperbolic shaped lens cross section is obtained.